WHAT IS CLAIMED IS:

1. A digital optical communication device comprising:

an optical reception circuit converting an optical signal received from any external source to an electric signal;

a decoding circuit decoding the electric signal resultant from conversion by said optical reception circuit and judging whether or not the decoding is normally completed;

a reception light intensity level judgement circuit judging an intensity level of received light based on the electric signal resultant from conversion by said optical reception circuit;

a coding circuit coding transmission data; and

an optical transmission circuit determining a light emission intensity based on result of the judgement by said reception light intensity level judgement circuit and result of the judgement by said decoding circuit and converting the transmission data coded by said coding circuit to an optical signal with the light emission intensity.

2. The digital optical communication device according to claim 1, wherein

said reception light intensity level judgement circuit compares the electric signal resultant from conversion by said optical reception circuit with a plurality of reference voltages, and judges said intensity level of the received light based on result of the comparison.

3. The digital optical communication device according to claim 1, wherein

said optical transmission circuit determines the light emission intensity by referring to the intensity level judged by said reception light intensity level judgement circuit if said decoding circuit judges that the decoding is normally completed, and

said optical transmission circuit determines the light emission intensity without referring to the intensity level judged by said reception

light intensity level judgement circuit if said decoding circuit judges that the decoding is not normally completed.

4. The digital optical communication device according to claim 1, further comprising:

an optical fiber connected to said optical transmission circuit; and

an optical fiber connected to said optical reception circuit.

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5. A digital optical communication device comprising:

an optical reception circuit converting an optical signal received from any external source to an electric signal;

a decoding circuit decoding the electric signal resultant from conversion by said optical reception circuit and extracting reception light intensity information of a secondary station;

a coding circuit coding transmission data; and

an optical transmission circuit determining a light emission intensity based on the reception light intensity information of the secondary station extracted by said decoding circuit, and converting the transmission data coded by said coding circuit to an optical signal with the light emission intensity.

~~6. The digital optical communication device according to claim 5,~~ wherein

said decoding circuit decodes the electric signal resultant from conversion by said optical reception circuit and extracts the reception light intensity information and reception normal completion information of the secondary station, and

said optical transmission circuit determines the light emission intensity based on the reception light intensity information and the reception normal completion information of the secondary station that are extracted by said decoding circuit, and converts the transmission data coded by said coding circuit to the optical signal with the light emission intensity.

7. The digital optical communication device according to claim 5, further comprising:

an optical fiber connected to said optical transmission circuit; and

an optical fiber connected to said optical reception circuit.

8. A digital optical communication device comprising:

an optical reception circuit converting an optical signal received from any external source to an electric signal;

a decoding circuit decoding the electric signal resultant from conversion by said optical reception circuit and judging whether or not the decoding is normally completed;

a reception light intensity level judgement circuit judging an intensity level of received light based on the electric signal resultant from conversion by said optical reception circuit;

a coding circuit generating reception light intensity information of a primary station based on result of the judgement by said decoding circuit and result of the judgement by said reception light intensity level judgement circuit and coding transmission data and said reception light intensity information; and

an optical transmission circuit converting the reception light intensity information and the transmission data coded by said coding circuit to an optical signal.

9. The digital optical communication device according to claim 8, wherein

said coding circuit encodes said transmission data, said reception light intensity information, and reception normal completion information judged by said decoding circuit, and

said optical transmission circuit converts the transmission data, the reception light intensity information, and the reception normal completion information coded by said coding circuit to the optical signal.

10. The digital optical communication device according to claim 8,

further comprising:

an optical fiber connected to said optical transmission circuit; and

an optical fiber connected to said optical reception circuit.

11. A digital optical communication device comprising:

an optical reception circuit converting an optical signal received from any external source to an electric signal;

a decoding circuit decoding the electric signal resultant from conversion by said optical reception circuit, extracting a light emission intensity requested from a secondary station, and judging whether or not the decoding is normally completed;

a reception light intensity level judgement circuit judging a reception light intensity level based on the electric signal resultant from conversion by said optical reception circuit;

a secondary station request light emission intensity control signal generation circuit generating light emission intensity information requested to the secondary station based on result of the judgement by said decoding circuit and on the reception light intensity level judged by said reception light intensity level judgement circuit;

a coding circuit coding transmission data and the light emission intensity information requested to the secondary station generated by said secondary station request light emission intensity control signal generation circuit; and

an optical transmission circuit converting the transmission data and the light emission intensity information requested to the secondary station that are coded by said coding circuit with the light emission intensity requested from the secondary station that is extracted by said decoding circuit.

12. The digital optical communication device according to claim 11, wherein

said reception light intensity level judgement circuit judges the reception light intensity level based on the electric signal resultant from

conversion by said optical reception circuit from the time at which said decoding circuit detects a start flag to the time at which said decoding circuit detects a stop flag.

13. The digital optical communication device according to claim 11, wherein

said reception light intensity level judgement circuit judges the reception light intensity level by measuring a pulse width of the electric signal resultant from conversion by said optical reception circuit.

14. The digital optical communication device according to claim 11, further comprising:

an optical fiber connected to said optical transmission circuit, and

an optical fiber connected to said optical reception circuit.

15. A digital optical communication device comprising:

an optical reception circuit converting an optical signal received from any external source to an electric signal;

a decoding circuit decoding the electric signal resultant from conversion by said optical reception circuit, extracting a secondary station light emission intensity information, and judging whether or not the decoding is normally completed;

a reception light intensity level judgement circuit judging a reception light intensity level based on the electric signal resultant from conversion by said optical reception circuit;

a primary station light emission intensity control signal generation circuit determining a light emission intensity of a primary station based on the secondary station light emission intensity information extracted by said decoding circuit, on result of the judgement by said decoding circuit, and on result of the judgement by said reception light intensity level judgement circuit;

a coding circuit coding transmission data and information on the light emission intensity of the primary station determined by said primary

station light emission intensity control signal generation circuit; and

an optical transmission circuit converting the transmission data and the light emission intensity information coded by said coding circuit to an optical signal with the light emission intensity determined by said primary station light emission intensity control signal generation circuit.

16. The digital optical communication device according to claim 15, further comprising:

an optical fiber connected to said optical transmission circuit; and

an optical fiber connected to said optical reception circuit.

~~17. A digital optical communication method comprising the steps of:~~

converting an optical signal received from any external source to an electric signal;

decoding said electric signal resultant from conversion and judging whether or not the decoding is normally completed;

judging an intensity level of received light based on said electric signal resultant from conversion;

coding transmission data; and

determining a light emission intensity based on said judged intensity level of the received light and on result of said judgement as to whether or not the decoding is normally completed, and converting said coded ~~transmission data to an optical signal with the light~~ emission intensity.

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18. A digital optical communication method comprising the steps of:

converting an optical signal received from any external source to an electric signal;

decoding said electric signal resultant from conversion and extracting reception light intensity information of a secondary station;

coding transmission data; and

determining a light emission intensity based on said extracted reception light intensity information of the secondary station, and converting said coded transmission data to an optical signal with the light

emission intensity.

~~19. A digital optical communication method comprising the steps of:~~

converting an optical signal received from any external source to an electric signal;

decoding said electric signal resultant from conversion and judging whether or not the decoding is normally completed;

judging an intensity level of received light based on said electric signal resultant from conversion;

generating reception light intensity information of a primary station based on said judged intensity level of the received light and on result of said judgement as to whether or not the decoding is normally completed, and coding transmission data and said reception light intensity information; and

converting said coded reception light intensity information and said coded transmission data to an optical signal.

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20. A digital optical communication method comprising the steps of:

converting an optical signal received from any external source to an electric signal;

decoding said electric signal resultant from conversion, extracting a light emission intensity requested from a secondary station, and judging whether or not the decoding is normally completed;

judging a reception light intensity level based on said electric signal resultant from conversion;

generating light emission intensity information requested to the secondary station based on result of said judgement as to whether or not the decoding is normally completed and on said judged reception light intensity level;

coding transmission data and said generated light emission intensity information requested to the secondary station; and

converting said coded transmission data and said coded light emission intensity information requested to the secondary station to an

optical signal with said extracted light emission intensity requested from the secondary station.

21. A digital optical communication method comprising the steps of:

converting an optical signal received from any external source to an electric signal;

decoding said electric signal resultant from conversion, extracting a secondary station light emission intensity, and judging whether or not the decoding is normally completed;

judging a reception light intensity level based on said electric signal resultant from conversion;

determining a light emission intensity of a primary station based on said extracted secondary station light emission intensity, on result of said judgement as to whether or not the decoding is normally completed, and on said judged reception light intensity level;

coding transmission data and information on said determined light emission intensity of the primary station; and

converting said coded transmission data and said coded light emission intensity information to an optical signal with said determined light emission intensity.

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